SERVICE MANUAL
& PARTS LIST (with price)

FX-8000G (GX-969)

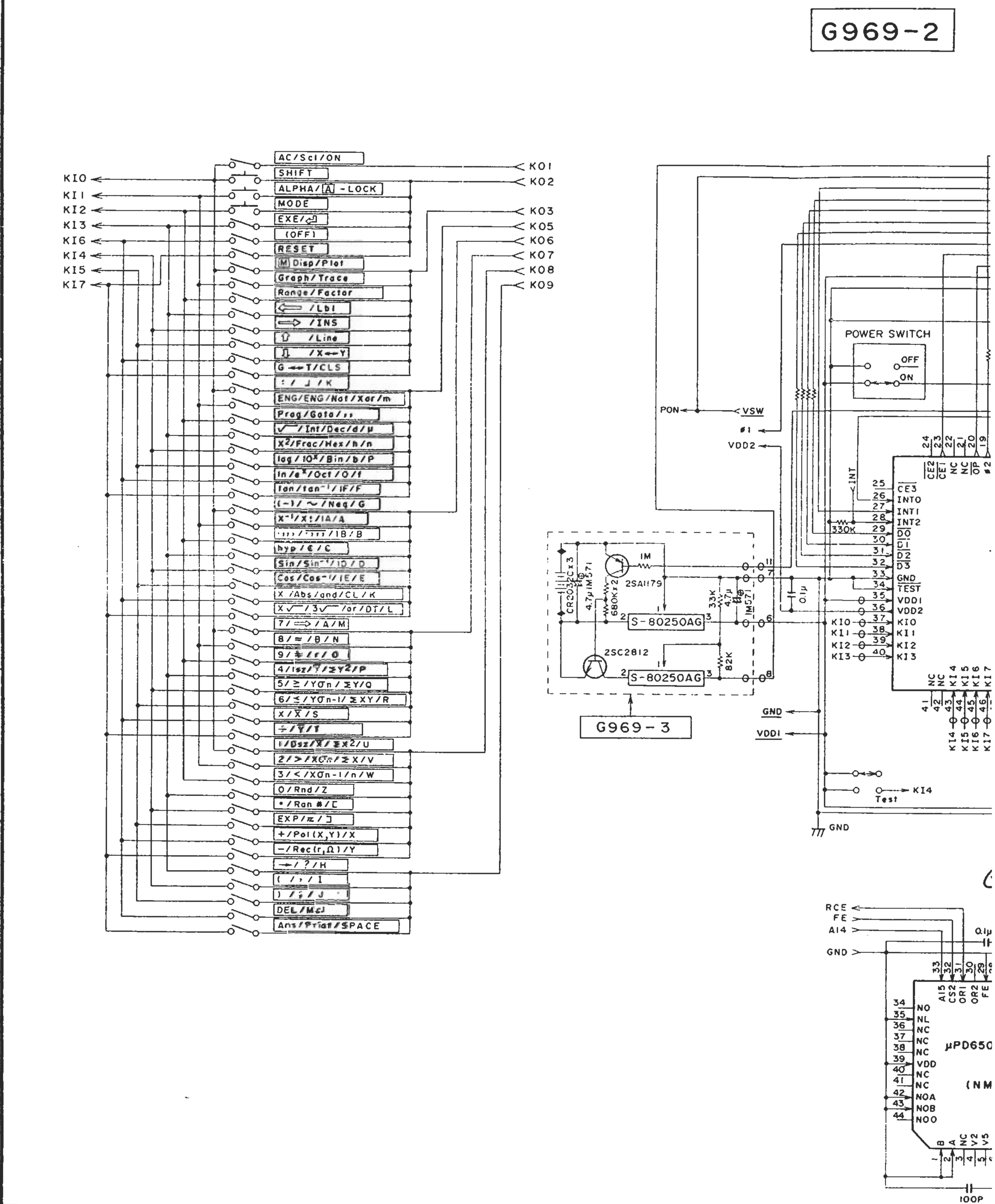
NOV. 1986

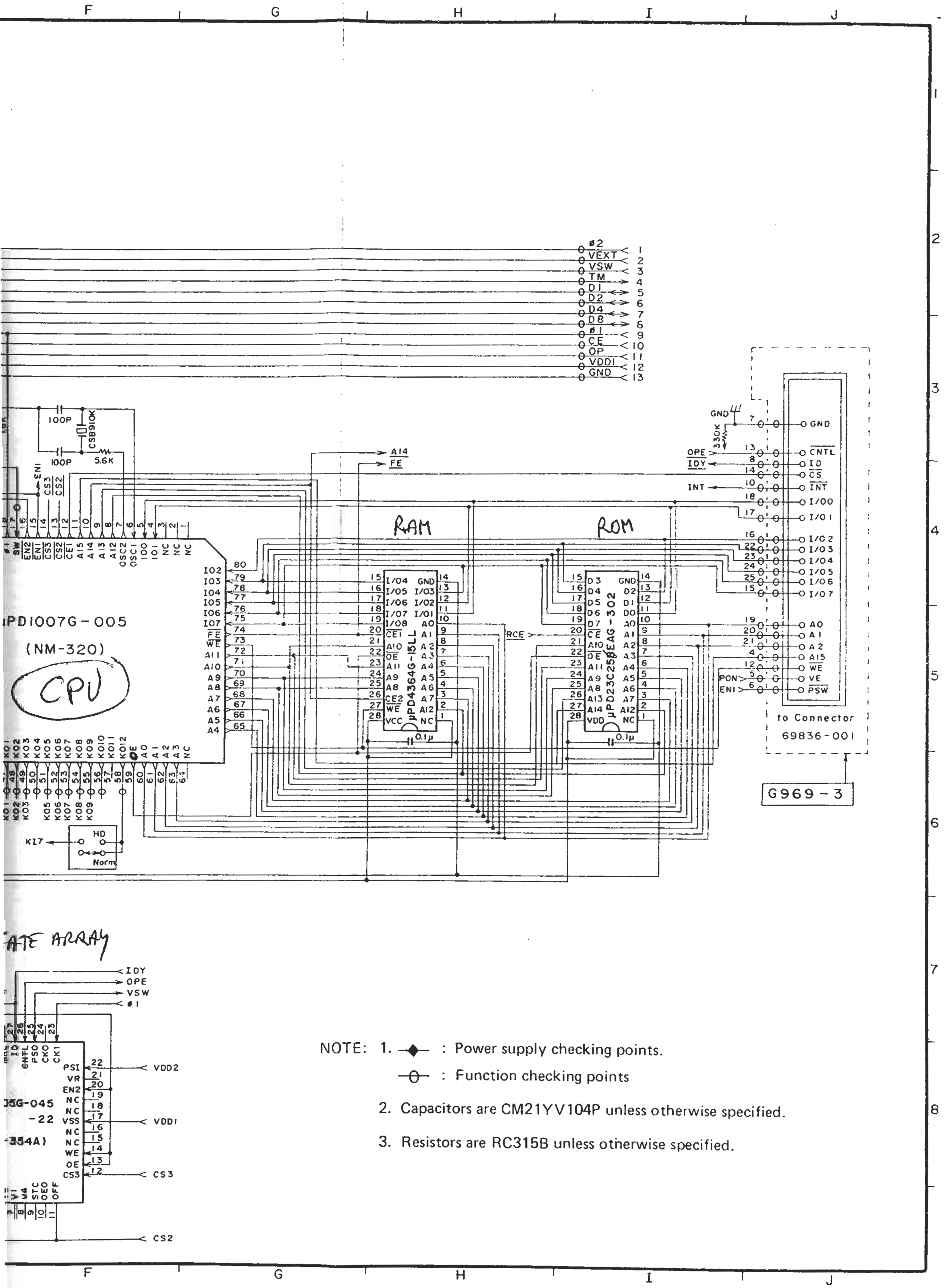
CASIO®

CONTENTS

1. SCHEMATIC DIAGRAM

1-1. Main Block





NOTE: 1. —◆— : Power supply checking points.

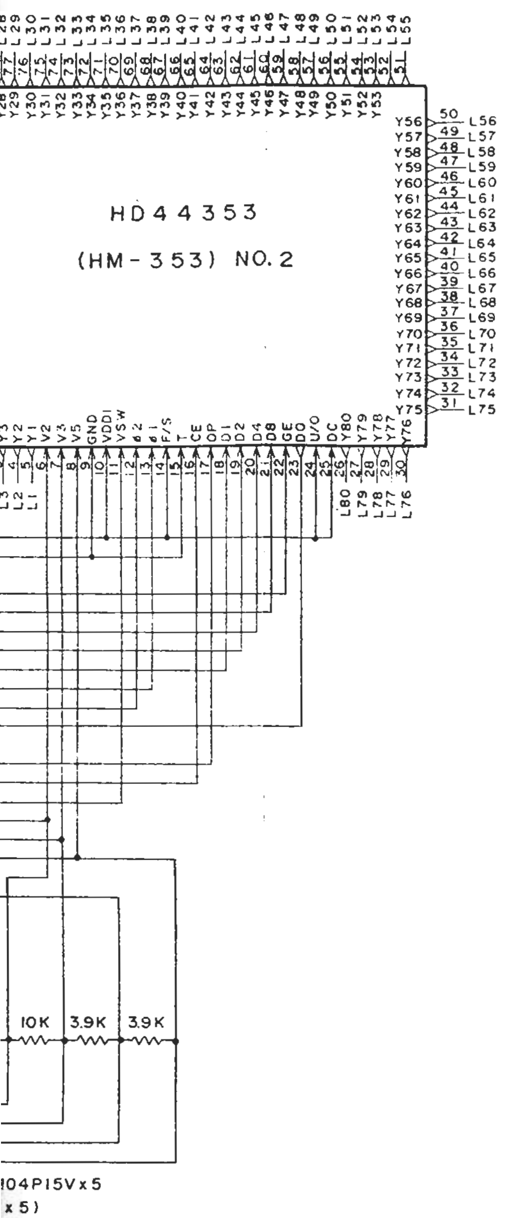
—⊖— : Function checking points

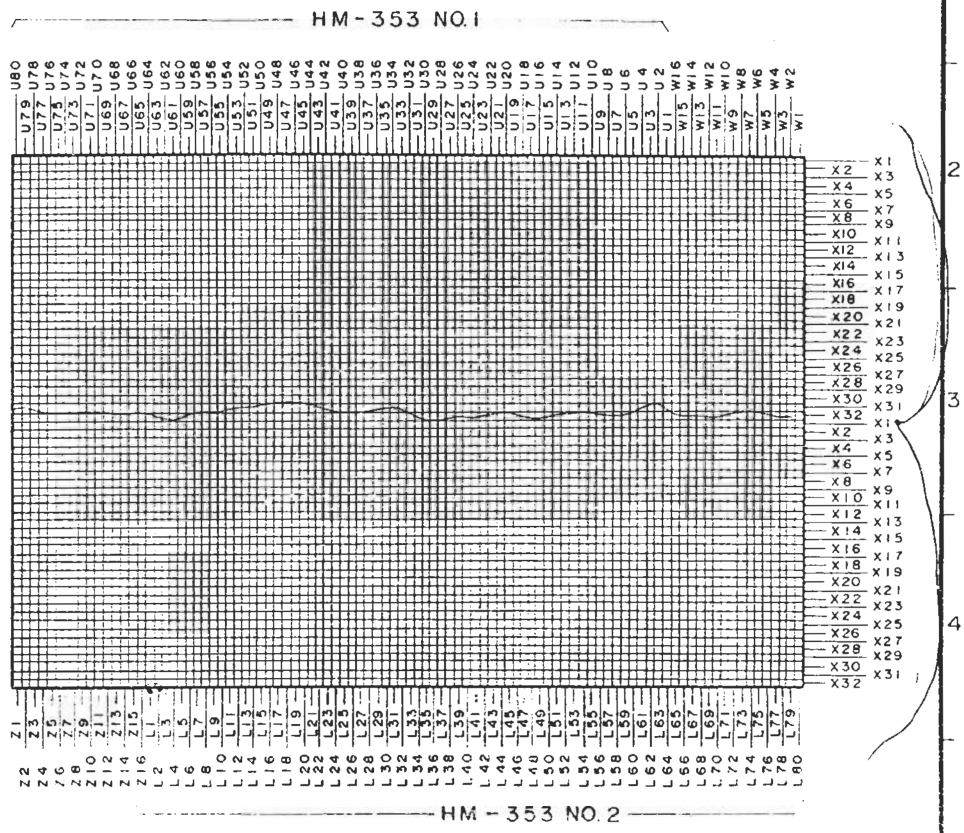
2. Capacitors are CM21YV104P unless otherwise specified.

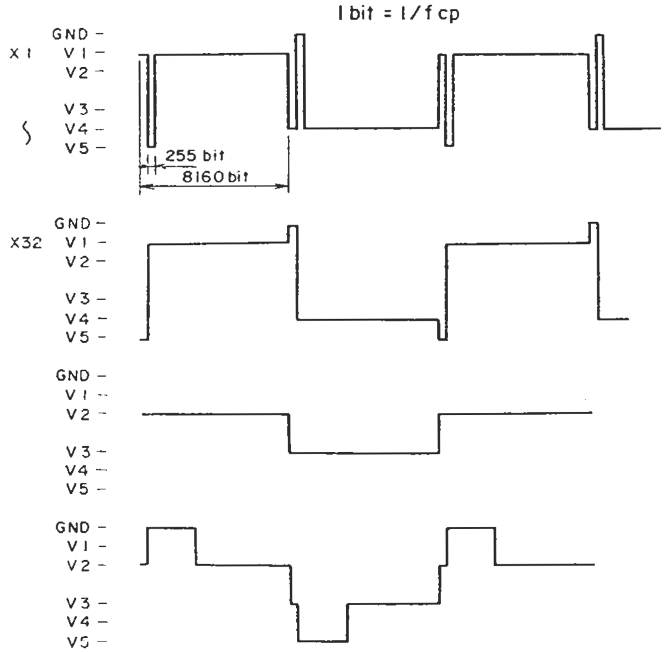
3. Resistors are RC315B unless otherwise specified.

F G H I J

CDI2-TS
(LD-B8122A)





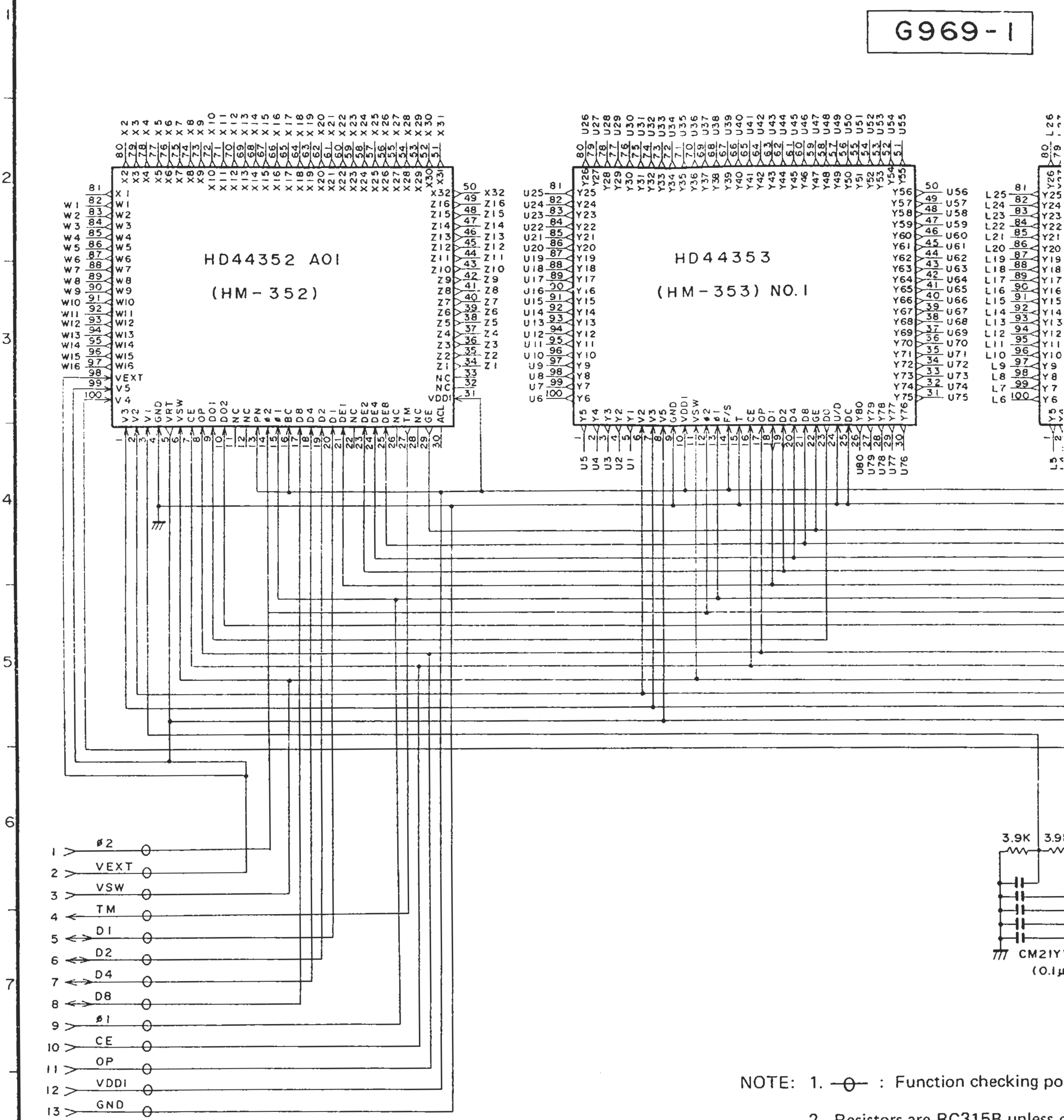


ts.

herwise specified.

nless otherwise specified.

1-2. Display Block



NOTE: 1. —⊖— : Function checking po

2. Resistors are RC315B unless c

3. Capacitors are CM21YV104P

2. SPECIFICATIONS

DISPLAY: The display is capable of displaying 16-character by 8-line text and memory. Graphs are produced on a 95 by 63-dot matrix.

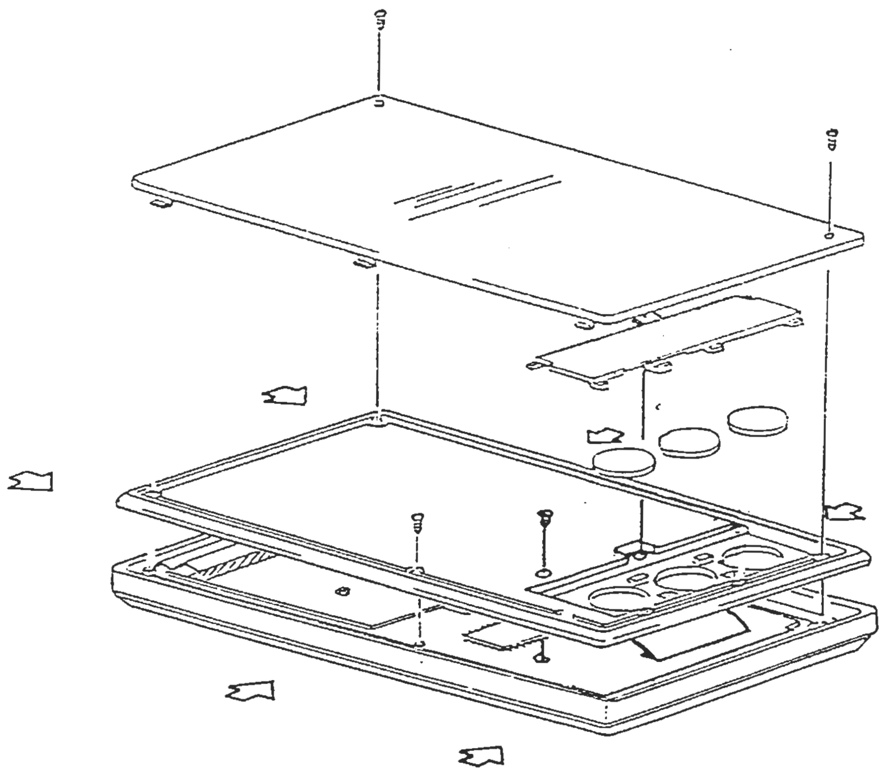
POWER SOURCE: 3 lithium batteries (CR-2032C).

BATTERY LIFE: Approximately 100 hours on type CR-2032C.

AUTO POWER OFF: Power is automatically switched off approximately 6 minutes after last operation.

AMBIENT TEMPERATURE RANGE: 32°F ~ 104°F (0°C ~ 40°C)

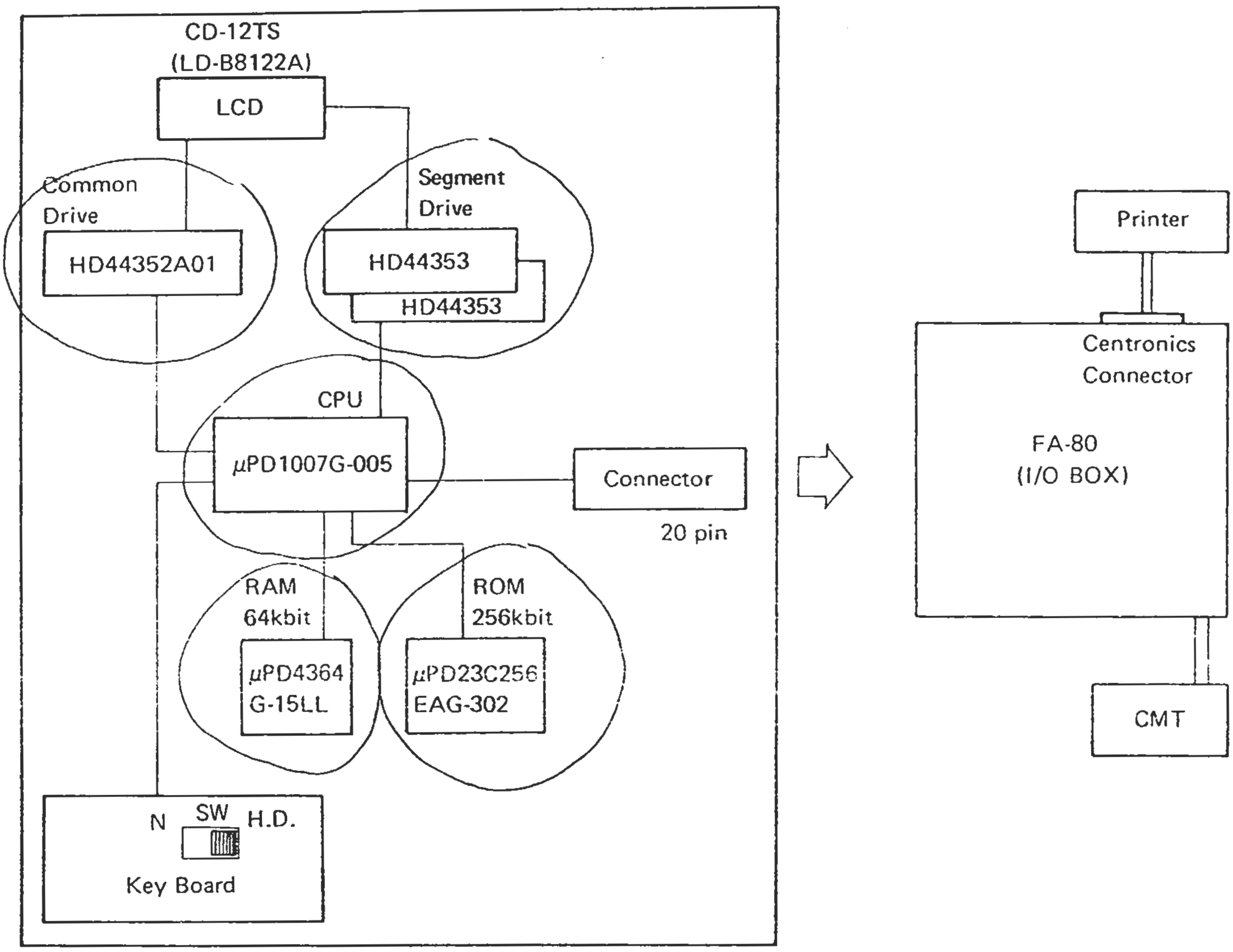
3. DISASSEMBLY



1) Remove 5 screws from the back.

2) Unhook (⇨ portion) the lower case from the upper case.

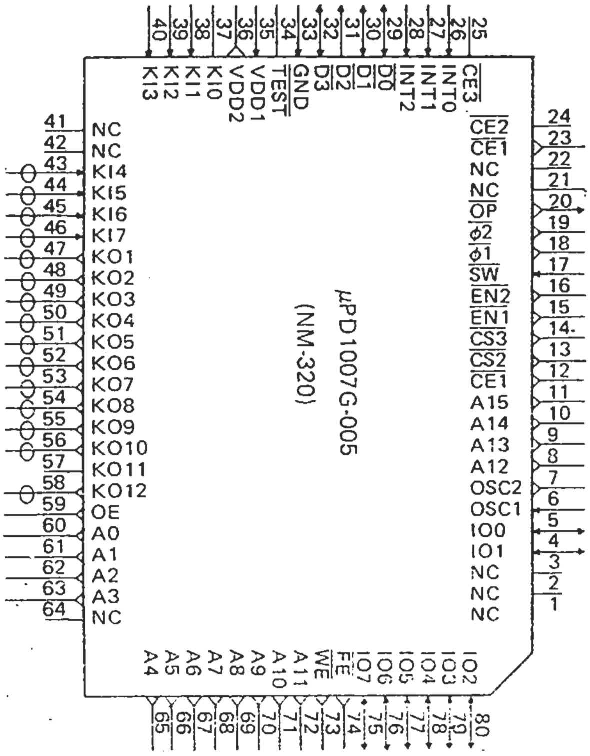
4. BLOCK DIAGRAM



(FX-8000G)

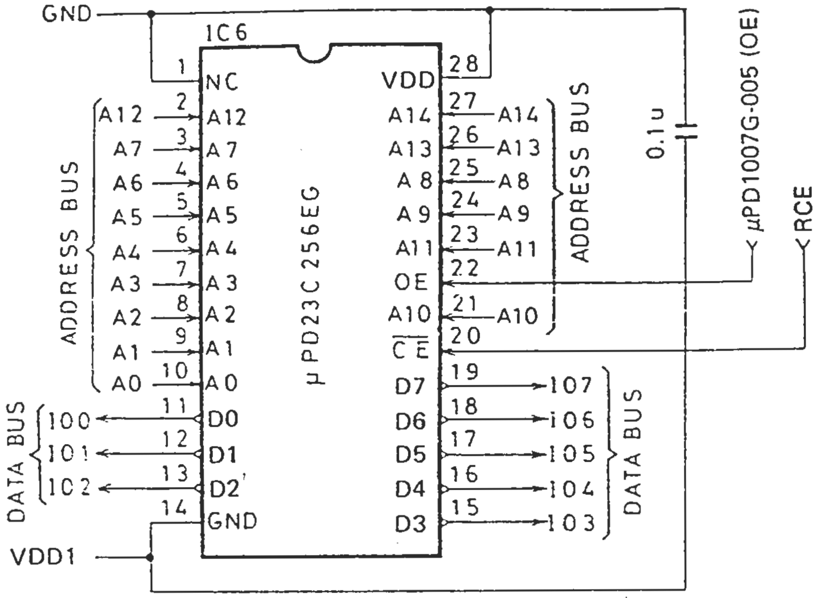
5. LSI (Pin Functions)

A) CPU (μPD1007G-005)



Pin No.	Symbol	Function
1~3	NC	NC
4, 5	IO1, IO0	Data Input/Output
6, 7	OSC1, OSC2	Oscillation connection terminal
8~11	A12~A15	Address signal
12	CE1	Chip enable signal
13, 14	CS2, CS3	Chip select signal
15, 16	EN1, EN2	Control FA-80
17	SW	Switch signal
18, 19	φ1, φ2	Clock pulse
20	OP	Operation signal
21, 22	NC	NC
23	CE1	Chip enable
24, 25	CE2, CE3	NC
26~28	IT0~IT3	Interrupt signal
29~32	D0~D3	Data signal
33, 34	GND, TEST	GND
35	VDD1	VDD1
36	VDD2	VDD2
37~40	KI0~KI3	Key input signal
41, 42	NC	NC
43~46	KI4~KI7	Key input signal
47~58	KO1~KO12	Key output signal
59	OE	Output enable signal
60~63	A0~A3	Address signal
64	NC	NC
65~72	A4~A11	Address signal
73	WE	Read/Write signal
74	FE	Chip enable signal to RAM
75~80	IO7~IO2	Data signal

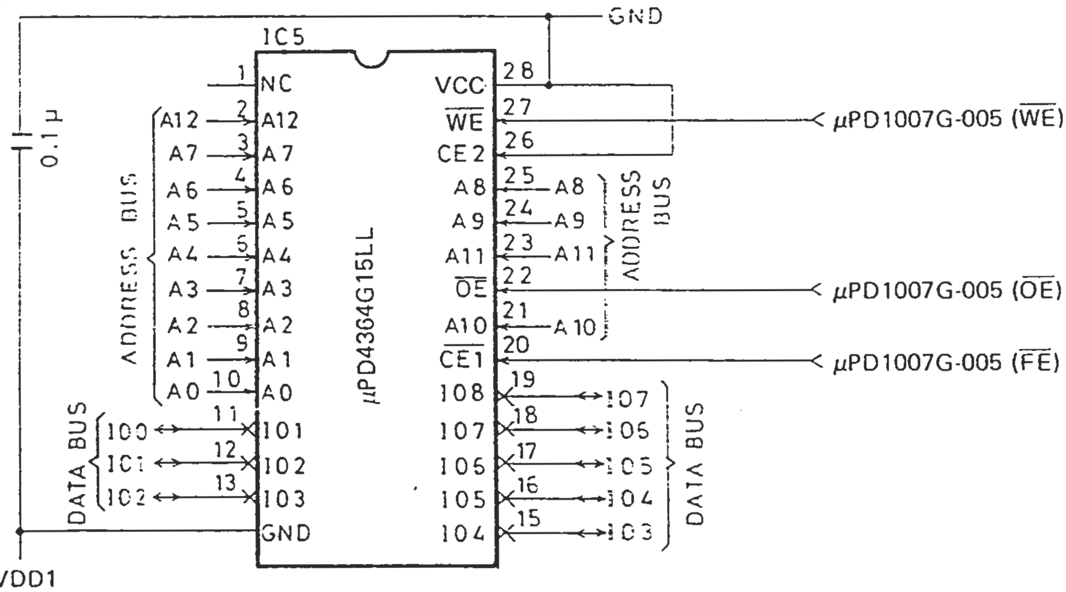
B) ROM (μPD23C256EG)



(1) Pin function

A0 ~ A14 (Input) .... Address input
D0 ~ D7 (Output) .... Data output
OE (Input) .... Output enable
$\overline{\text{CE}}$ (Input) .... Chip enable

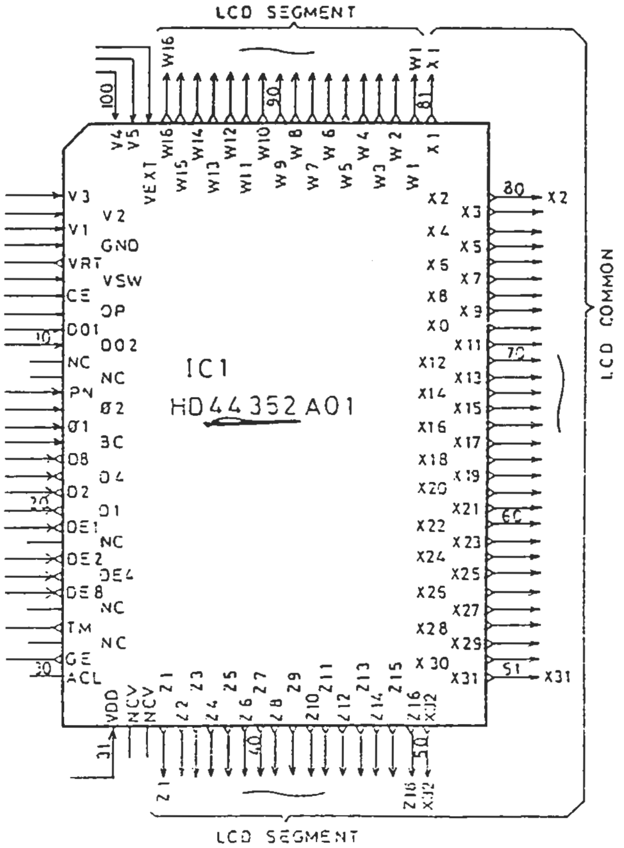
C) RAM (μPD4364G15LL)



(1) Pin function

A0 ~ A12 (Input) .... Address input
IO1 ~ IO8 (Input/Output) .... Data input/output
$\overline{\text{OE}}$ (Input) .... Output enable
$\overline{\text{CE1}}$, CE2 (Input) .... Chip enable
$\overline{\text{WE}}$ (Input) .... Read/Write terminal, Low: Data input,
High: Data output

D) LCD Driver (HD44352A01)



(1) Pin function

V5 ~ V1 (Input) .... LCD driving power supply

GND (Input) .... LSI positive side power supply

VRT (Output)............... Output voltage controlled by built-in electronic volume when VSW is low.

VSW (Input) .... Power switch (Low when LCD is on)

CE (Input) .... Chip enable (For accessing HD61700A01)

OP (Input) .... Data operation signal

DO1 (Input) .... W segment display data

DO2 (Input) .... Z segment display data

PN (Input) .... Designation of segment direction

ϕ2, ϕ1 (Input) .... Clock pulse for data access

BC (Input) .... Designation of frame frequency (Low level input)

D8 ~ D1 (Input/Output) ...... Both way data bus with HD61700A01

DE1 ~ DE8 (Input/Output) .... Both way data bus with HD44353A01

TM (Output) .... Timing pulse output with 50% duty

GE (Output) .... Clear the display by Low output when CE is input

ACL (Output)............... Not used (Test output)

VDD (input) .... LSI negative power supply

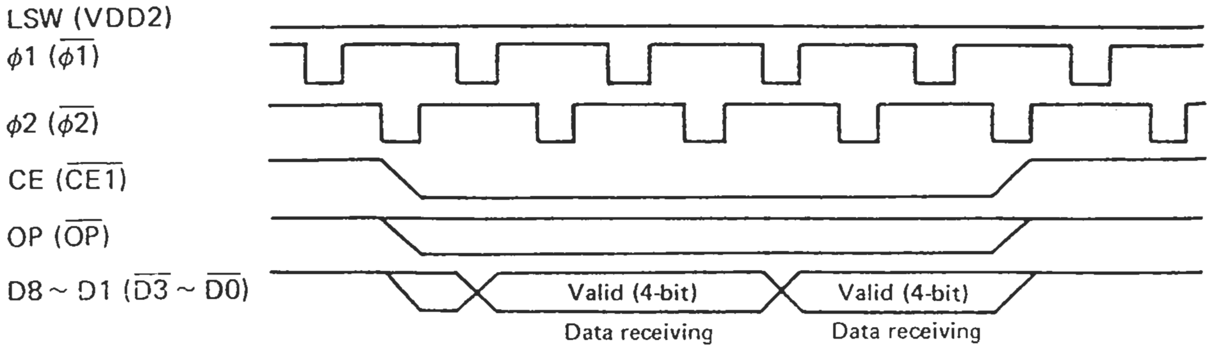
Z1 ~ Z16 (Output) .... Segment output

X32 ~ X1 (Output) .... Common output

W1 ~ W16 (Output) .... Segment output

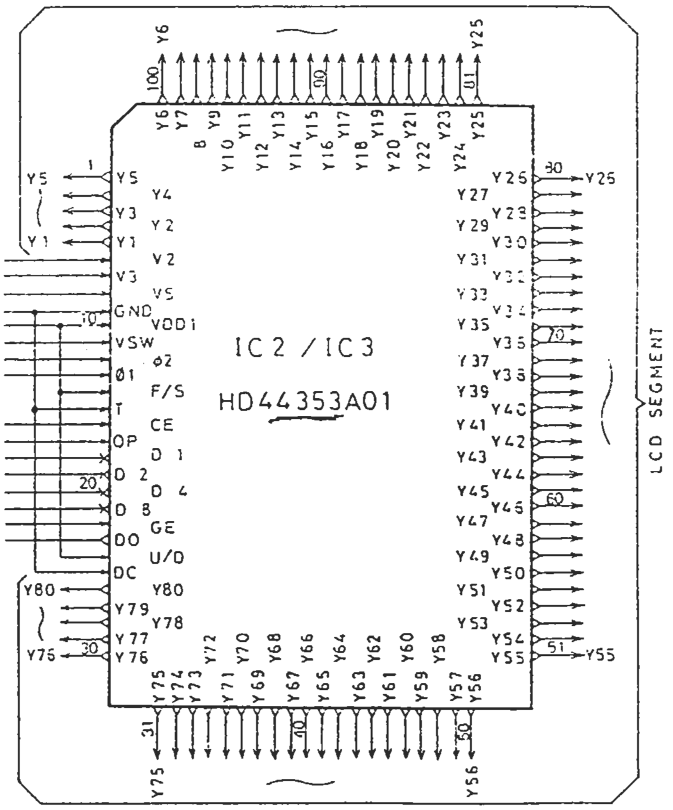
VEXT (Input) .... Display power supply

(2) LCD driver access timing chart



$\overline{CE1}$ and $\overline{OP}$ vary by $\overline{\phi 2}$ synchronizing pulse, and $\overline{D3}$ ~ $\overline{D0}$ vary by $\overline{\phi 1}$ synchronizing pulse.

E) LCD Driver (HD44353A01)



(1) Pin Function

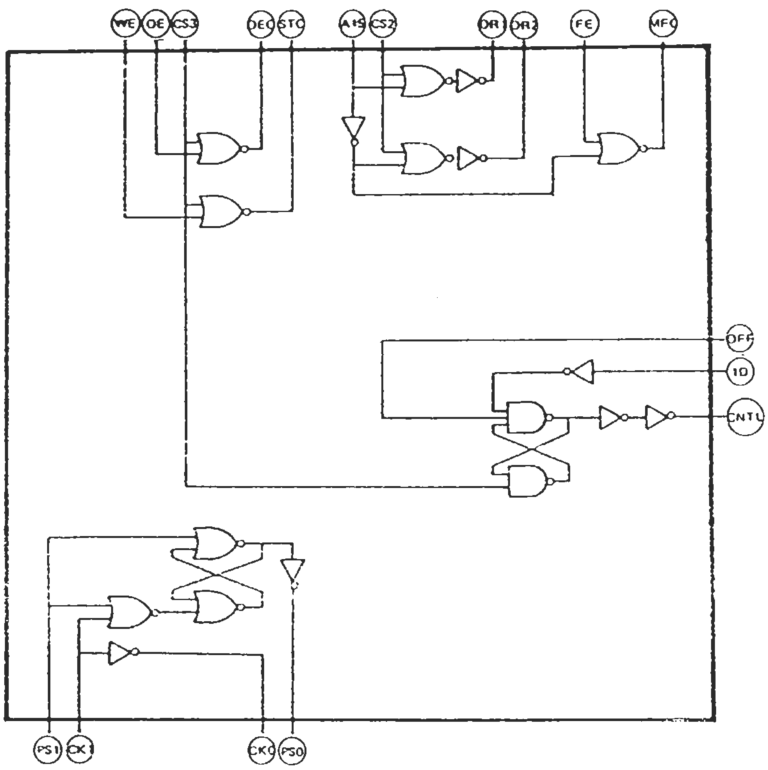
Y1 ~ Y80 (Output)........... Segment output
VDD1 (Input)............... LSI negative power supply
F/S (Input) .... Frame frequency designation
T (Input) .... Test terminal input
DO (Output) .... HD44352A01 segment output data
U/D (Input) .... Designation of segment direction
DC (Input) .... Device code

* Refer to HD44352A01 for other pins.

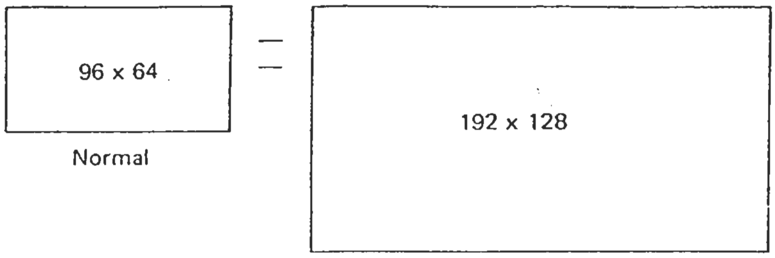
F) Gate Array (μPD65005G-045-22)

1. Generates chip enable signal for ROM and reset signal to FA-80

2. Controls VSW signal



6. DISPLAY



Normal

High Density

Graphic print

N HD



N : Normal

HD : High Density

7. TROUBLESHOOTING

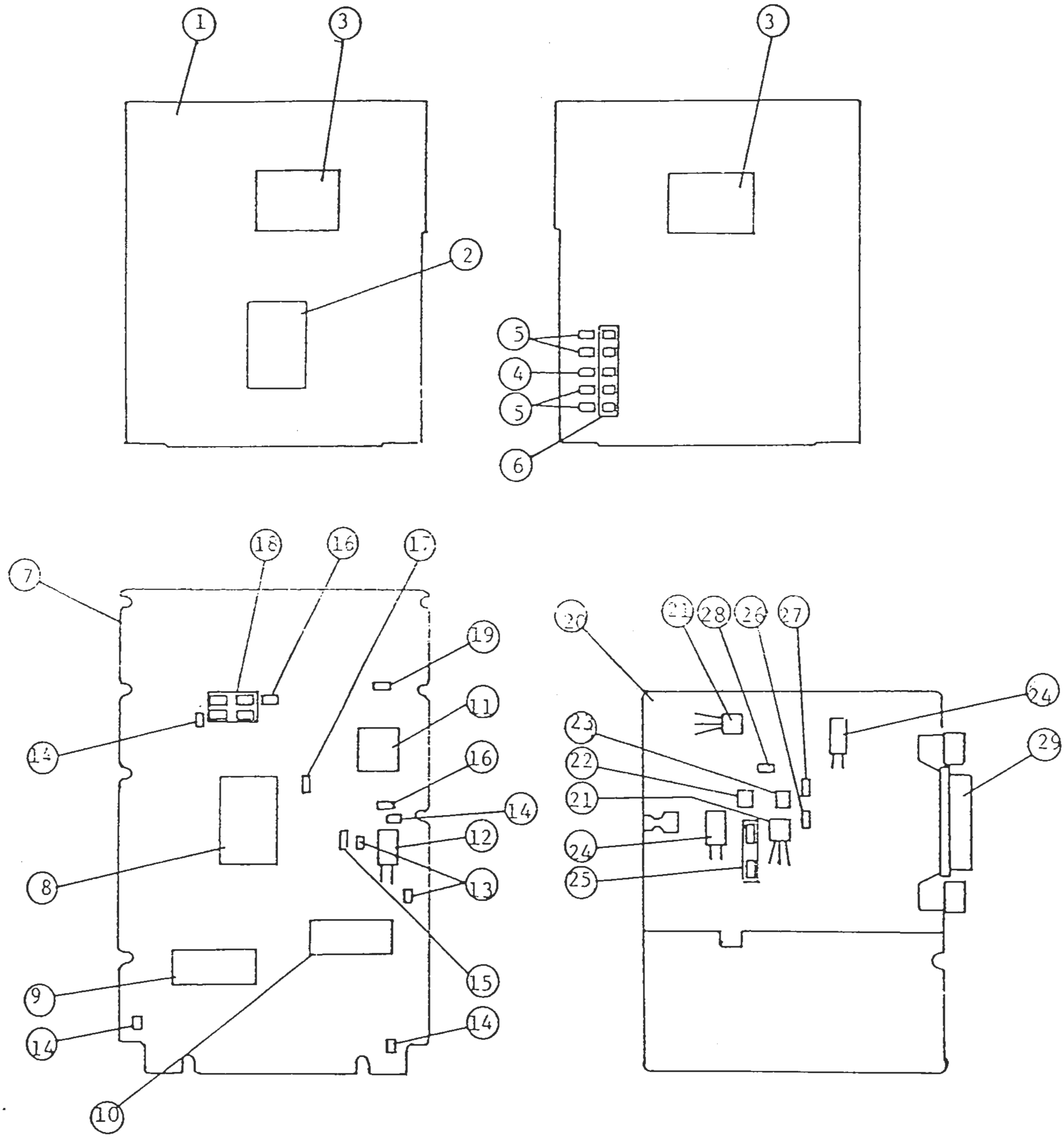
SYMPTOM	CAUSE	SOLUTION
Intermittent display	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Poor soldering on LSI, capacitor or resistor	Resolder
No display at all	Weak battery	Replace battery
	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Defective LSI, capacitor or resistor	Repalce
Erratic display	Poor contact between LCD and PCB	Replace the heatseal
	Poor soldering on LSI	Resolder
Certain key does not function	Dirt on key contact	Clean or replace contact
	Heavy key motion	Clean or replace the key
	Poor soldering on LSI	Resolder
	Defective LSI, capacitor or resistor	Replace
All keys do not function	Constant contact is made on certain key	Separate the contact
	Defective LSI, capacitor or resistor	Replace
Heavy key motion	Dirt or scratch on the key	Clean or replace the key

8. OPERATION CHECK

Operation	Read out
PW/SW – ON (RESET) MODE ⇐ (Contrast adjustment)	**** MODE **** sys mode : RUN cal mode : COMP angle : Deg display : Norm Step : Ø
MODE 2 ⇒	sys mode : WRT cal mode : COMP angle : Deg display : Norm 1466 Bytes Free Prog Ø - 1 - 2 3 4 5 6 7 8 9
EXE SHIFT DEL : 8 ÷ · 9 → ALPHA X^{-1} SHIFT (–) ALPHA 0 :	MC1 : 8 ÷ . 9 → A ~ Z :
SHIFT ALPHA X^{-1} ° . . . hyp sin cos tan (–) → ( ) X^y $^x\sqrt{\ }$ 7 8 9 4 5 6 x ÷ 1 2 3 + – 0 SHIFT :	MC1 : 8 ÷ . 9 → A ~ Z : ABCDEFGHIJKLMNOPQRS TUVWXYZ ▲ --
$\sqrt{\ }$ ANS X^2 log 9 ln 2 EXP 3 SHIFT : SHIFT ALPHA Prog ENG Graph Range ⇐ ⇑ ⇓ ⇐ SHIFT G ↔ T SHIFT [M] Disp ALPHA Prog	MCL : 8 ÷ . 9 → A ~ Z : ABCDEFGHIJKLMNOPQRS TUVWXYZ ▲ √ Ans^2 log 9 ln 2E3 ▲ "mGraph Y = Range C1s Plot" –
PW/SW – OFF – ON	(the same display as the first line)
Prog 1 EXE	Prog 1 4.6 7 7 7 2 2 ϕ 9 2 E + 2 4 – Disp –
EXE EXE	Prog 1 4.6 7 7 7 2 2 0 9 2 E + 2 4 3.3 9 2 8 ϕ ϕ 5 9 2 E + 2 5 mGraph Y = Range C1s Plot
AC	–
ALPHA X^{-1} EXE	A 8.8 8 8 8 8 8 8 8 9

Operation	Read out
MODE · EXE	** Defm ** Program : 55 Memory : 26 1391 Bytes Free
PW/SW – OFF – ON (repeat three times) Prog 1 EXE EXE EXE	Prog 1 4.677722092E+24 3.392800592E+25 mGraph Y = Range Cls Plot

9. PCB ASS'Y VIEW



10. PARTS LIST

MODEL : FX-8000G
(GX969AA)

Notes: 1. Prices and specifications are subject to change without prior notice.
2. As for spare parts order and supply, refer to "GUIDEBOOK for Spare Parts Supply" published separately.
3. Refer to the component location for numbers in the Ref. column, if any.

Ref.	Code no.	Parts name	Spec no.	Qt	※	Unit price J.F.Yen(¥) FOB Japan	Rank
A. PCB-G969-1							
☆ 1	43018740	PCB-G969-1 (Without components)	A22108-1	1		200	C
2	20100434	LSI	HD44352A01	1		690	A
☆ 3	20100630	LSI	HD44353	1		760	A
4	27908331	Chip resistor	RC315B10K-G	1	10	7	C
5	27905536	Chip resistor	RC315B3.9K-G	4	20	5	C
6	71032167	Chip capacitor	CM21YV104P15V	5	10	28	C
B. PCB-G969-2							
☆ 7	43018750	PCB-G969-2 (Without components)	A22109-1	1		200	C
☆ 8	20100406	LSI	UPD1007G-005	1		1,200	A
☆ 9	20101239	LSI	UPD4364G-15LL	1		650	A
☆ 10	20101596	LSI	UPD23C256EAG-302	1		540	A
☆ 11	20101232	LSI	UPD65005G-045-22	1		250	A
12	25201507	Ceramic oscillator	CSB910K	1		100	C
13	28907168	Chip capacitor	CM21CH101K25V	2	10	14	C
14	71032167	Chip capacitor	CM21YV104P15V	4	10	28	C
15	27905413	Chip resistor	RC315B5.6K-J	1	10	5	C
16	27905129	Chip resistor	RC315B330K-J	2	10	9	C
☆ 17	27905332	Chip resistor	RC315B..8K-J	1	20	3	C
18	27908460	Chip resistor	RC315B5.2K-J	4	10	3	C
☆ 19	28960245	Chip capacitor	CM21SL 01K25V-T1	1	20	11	C
	63442560	FPC joiner, G935 (Between PCB-G969-1 and PCB-G969-2)	A48317-1	1	20	29	C
☆	63828090	FPC joiner, G969 (Between PCB-G969-2 and PCB-G969-3)	A48317-6	1	10	37	C
	63283830	Flat screw, A-G403 (For PCB-G969-2)	A44793-5	13	50	2	C

Notes: ☆ - New parts
Qt - Quantity per unit
※ - Minimum order/supply quantity

Rank A: Essential
B: Stock recommended
C: Less recommended
X: No stock recommended

Ref.	Code no.	Parts name	Spec no.	Qt	*	Unit price J.F.Yen(Y) FOB Japan	Rank
C. PCB-G969-3							
☆20	43018760	PCB-G969-3 (Without components)	A22110-1	1		200	C
21	21207098	Regulator IC	S-80250AG	2		120	C
22	22008269	Transistor	2SA1179(M5,M6)	1	10	18	C
23	22210335	Chip transistor	2SC2812(L5,L6)	1	10	18	C
24	28049200	Electrolytic capacitor	25RC2-4R7	2	10	18	C
25	27908047	Chip resistor	RC315B680K-J	2	10	8	C
26	27908501	Chip resistor	RC315B82K-G	1	20	5	C
27	27905463	Chip resistor	RC315B33K-G	1	20	5	C
28	27908136	Chip resistor	RC315B1M-J	1	10	4	C
	63258131	P spring, G195	A33138A-1	1	10	4	C
	63367230	Insulation seal, B-G839 (For P spring)	A47036-1	1	20	3	C
29	35010182	Connector	69836-001	1		560	C
	63811590	Connector shield plate,G760	C31005-1	1		100	C
	63810150	Connector cap, G760	C41369-1	1	20	20	C
☆	63828070	Insulation seal, G969 (With PCB-G969-3)	A49138-1	1	20	10	C
	63283830	Flat screw, A-G403 (For PCB-G969-3)	A44793-5	6	50	2	C
	63357030	Flat screw, A-G452 (For Connector)	A33953-21	2	50	2	C
D. DISPLAY							
☆	33310714	LCD	CD-12TS	1		630	B
☆	63832820	LCD holder, G969	A22153-1	1	5	58	C
	63501230	Adhesive tape, G924 (For LCD)	A48595-5	2	20	5	C
	56006168	Heat seal, A-G935	EZ-058-1	1		110	B
	56006176	Heat seal, B-G935	EZ-058-2	1		130	B
	56006184	TH heat seal,G935	TH-06-2	1		400	B
	63477360	Insulation seal,G935AE (For Heat seal,A-G935)	A46277-6	1	20	11	C
	63442520	Insulation seal,G935B (For TH heat seal)	A45999-4	1	20	4	C
	63442530	Insulation seal,G935C (For TH heat seal)	A45999-5	2	20	3	C
	63442570	Insulation seal,G935D (For Heat seal,B-G935)	A48320-1	1	20	13	C
	63357030	Flat screw, A-G452 (For LCD holder)	33953-21	2	50	2	C

Notes: ☆ - New parts
Qt - Quantity per unit
* - Minimum order/supply quantity

Rank A: Essential
B: Stock recommended
C: Less recommended
X: No stock recommended

Ref.	Code no.	Parts name	Spec no.	Qt	*	Unit price J.F.Yen(Y) FOB Japan	Rank
E. KEY AND SLIDE KNOBS							
	00018215	Rubber key top set,GX935/969AA	For FX-7000/8000G	1		200	C
☆	63827990	Common film, G969	A37787-1	1		190	C
☆	63828000	Spacer, G969	A49108-1	1	20	12	C
	63382670	Sldie knob, G444	A36012-2	2	10	15	C
	63298310	Contact spring,G310	A45208-1	2	10	3	C
F. UPPER CASE							
☆	00073848	Upper case subassy,GX969AA	For FX-8000G	1		390	C
G. LOWER CASE							
☆	63828010	Lower case, G969	A11330-1	1		100	C
☆	63828050	Insert nut, G969 (For Batter holder)	A46649-2	1	20	12	C
	63354470	Insert nut, G430 (For Lower case/panel)	A46649-1	2	10	11	C
☆	63828030	Earth spring, G969	A48683-2	2	20	5	C
	63501140	Battery holder, G924	A37445-1	1	10	35	C
	63501160	Battery insulation seal,C-G924 (With Battery holder)	A48768-1	1	20	5	C
	63297621	Battery spring,A-G272	A33938A-1(+)	1	10	7	C
	63297630	Battery spring,B-G272	A33939-1(+/-)	2	10	8	C
	63297640	Battery spring,C-G272	A33940-1(-)	1	10	6	C
	63297660	Battery insulation seal,G272	A44154-1	3	10	2	C
	63357030	Flat screw,A-G452 (For Lower case)	A33953-21	2	50	2	C
☆	63828020	Lower panel, G969	A37782-1	1		120	C
	63477381	Battery installation label,G935	A46708A-3	1	20	14	C
	63349690	Screw, A-G910 (For Lower panel)	A45319-2	3	50	2	C
G. OTHER							
☆	63827940	Leather case, G969	A37887-1	1		100	C

Notes: ☆ - New parts
Qt - Quantity per unit
* - Minimum order/supply quantity

Rank A: Essential
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